Sheet #4 (OOP-Classes)

1. **What is the meaning of Object-Oriented Programming?? What are its main concepts?**
2. **What is information hiding and data encapsulation? How C++ support the information hiding?**
3. **Implement a Class Point that has the following characteristics:**
   a. **Constructors** including a default constructor that sets the Point to the origin.
   b. **Modifier methods** to modify the coordinate of the point (SetX( ), SetY( )).
   c. **Access methods** to know the point coordinates (GetX( ), GetY( )).
   d. A method **Move**: that shift the coordinate of the point.
   e. A method to **display** the coordinate of the Point.

   Write a C++ program to test your class? And draw the class diagram??
4. Create a class **Rectangle**. The class has attributes **length** and **width**, each of which defaults to 1. It has member functions that calculate the **perimeter** and the **area** of the rectangle. It has *set* and *get* functions for both **length** and **width**. The *set* functions should verify that **length** and **width** are each floating-point numbers larger than 0.0 and less than 20.0.
5. Consider the following class definition:

```
class BankAccount
{
private:
        double balance;
        double interest_rate;
public:
        void set(int dollars, int cents);   //The account balance is set to $dollars.cents;
        void update( );       //One year of simple interest is added to account balance
        double get_balance( ); //Return the current account balance
        double get_rate( ); //Return the current interest rate
        };
```

   Write the **code** for each member function? **Make use of the comments to build the code**.
6. **Find syntax errors (if any) in the declarations of the following classes.**

a.
```
class AA
{
public:
    void print( );
    int sum( );
    AA( );
    int AA(int, int);
private:
     int x;
     int y;
};
```

b.
```
class BB
{
    int one;
    int two;
public:
    bool equal( );
    print( );
    BB(int, int);
}
```

c.
```
class CC
{
public;
    void set(int, int);
    void print( );
    CC( );
    CC(int, int);
    bool CC(int, int);
private:
    int u;
    int v;
};
```

With best wishes,
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